



Research

Comparison of Pregnancy Outcomes of Booked and Unbooked Patients in the Niger Delta

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Abstract

Background: Sub-Saharan African countries have some of the worst maternal mortality ratios in the world sub-regions. Uncoordinated antenatal care practices and delivery outside health institutions are some of the determinants of these deaths experienced in the region. The objective of the study is to determine some of these erring behavioral antenatal practices that are inimical to good obstetric outcomes and how health care planners can use the results to close these gaps of maternal mortality and save lives.

Method: This study was a cross sectional retrospective study of the women who delivered at The Niger Delta University Teaching Hospital, Okolobiri, between 1 st June, 2021 to 1st June, 2022. The study compared the maternal and fetal outcomes between the booked and unbooked patients who delivered during this period. Relevant data to the study were extracted from patients' medical records using a proforma and data collected entered SPSS Version 25 for analysis.

Results: Three hundred and forty-six patients participated in the study, 72.3 % were booked and 27.7% were unbooked. Place of delivery N = 253, 75.5 % delivered in health facilities and 24.5 in non-Health facilities. Unbooked patients have prolonged labor lasting more than 24 hours, suffered more blood loss during delivery, their babies have more unfavorable one minute Apgar, all compared to outcomes of the booked patients

Conclusion: Booked patients have more favorable pregnancy outcomes compared to the unbooked patients. Health care planners and care providers should devote more time and resources to unbooked patients to have favorable pregnancy outcomes.

Keywords: Antenatal care, booked and unbooked patients, antenatal care practices, Place of delivery, fetal outcomes.

Introduction

There are different types of antenatal care practices in sub-Saharan Africa, and some of them are not formerly supervised. These behavioral health-seeking patterns could be the modifying force for negative antenatal outcomes in the sub-region.¹ Evidence-based studies have long recognized the importance of the use of institutional skilled attendants during the antenatal period, intrapartum, and in the puerperium. These values may have some of the panaceas for the wellness of the mother and baby at the end of pregnancy as exemplified in maternal care in developed countries.²

Antenatal care is a necessity for every pregnant woman, especially for women inhabiting developing countries like sub-Saharan Africa with sub-optimal

health systems to cater for pregnant women in dire obstetric emergencies like preeclampsia, eclampsia, and ruptured uterus where maternal deaths are imminent and other critical obstetric conditions that need help. Antenatal care is also important to prevent certain conditions that are linked to pregnancy but can be prevented by antenatal care participation: issues like maternal mortality itself, premature births, premature rupture of membranes, obstructed labour and others that are forerunners to maternal mortality.³

There is a need to critically appraise our antenatal care: those who registered for pregnancy in public or private hospitals otherwise known as orthodox or booked patients versus the other group of patients who never had formal antenatal care in pregnancy but

patronizes less standard form of care in traditional birth attendants' facilities or Churches. The latter conduct antenatal care with a mix of Traditional birth Attendants' practices and orthodox care with added church prayers.⁴ This study is to critically examine the outcomes of booked and their unbooked counterparts to identify where sub-Saharan Africa has gone wrong in the management of the pregnant woman.

Method

This study was conducted at the Niger Delta University Teaching Hospital, Okolobiri, Nigeria. The subjects were drawn from women who delivered in the hospital between June 1-6-2021 and 1-6-20022. It is a retrospective cross-sectional study design. A performed proforma was used to collect relevant data from patient hospital records.

Hospital records of women who delivered in the hospital during the study period without complete relevant data for the study were excluded. All data collected were entered into SPSS statistical software Version 25 and analyzed.

Results

Sociodemographic characteristics of parturient in the study

Table 1 shows that the mean age of the parturient was 29.8 years with a standard deviation of 5.2 years. The modal age group of parturient is the age group between 30 – 34 years (37.0%). Teenage parturient (2.6%) had the lowest proportion among study participants (Table 1). The Christians of the Pentecostal denomination were the most populous (88.4%) among all the religious organizations in the study. (Table 1). Furthermore, Table 1 shows that the majority of parturient attained secondary level of education (53.4%); about 2 in every 5 parturient were multiparous women (41.9%). The median parity is 2 with a range of 0 – 10 years.

Antenatal care and delivery features among parturient in the study

Of the 346 participants, 250 (72.3%) had ANC in a formal health facility (booked), while 96 participants (27.7%) did not have antenatal care at all during the index pregnancy (Unbooked). About 91 participants (26.3%) of the participants visited traditional birth attendance for care during the pregnancy.

The duration of labor was less than 24 hours among 313 parturient (90.5%), while 23 (6.6%) had a labor

duration of 24 – 48 hours and 4 (1.2%) were in labor for greater than 48 hours (Table 2). Two hundred and twenty-one parturient (63.9%) were delivered via spontaneous vaginal delivery, while 119 parturient (34.4%) had Caesarean section as the mode of delivery (Table 2). Mean blood loss at delivery was 451.3 ± 336.9 mls (Table 2).

Table 1: Sociodemographic characteristics of parturient in the study

Characteristics	Frequency (N = 346)	Percent (%)
15 - 19 years	9	2.6
20 - 24 years	47	13.6
30 - 34 years	128	37.0
>35 years	58	16.8
Mean Age of parturient	29.8 ± 5.2	
Religion		
Catholic	27	7.8
Protestant	23	6.6
Pentecostal	287	82.9
Jehovah's Witness	5	1.4
Islam	4	1.2
Marital Status		
Single/Separated	40	11.6
Married	306	88.4
Educational status		
Primary	29	8.4
Secondary	185	53.4
Tertiary	132	38.2
Parity		
Nulliparous	93	26.9
Primiparous	76	22.0
Multiparous	145	41.9
Grand multiparous	32	9.2
Median Parity (Range)	2 (0 – 10)	

Table 2: Antenatal care and delivery features among parturients in the study

Characteristics	Frequency (N = 346)	Percent (%)
Booking Status		
Booked	250	72.3
Unbooked	96	27.7
Visit to TBA		
Yes	91	26.3
No	255	73.7
Place of last Delivery		
Health Facility...	191	75.5
Non-medical facility	62	24.5
Duration of Labor		



No labor	6	1.7
< 24 hours	313	90.5
24 - 48 hours	23	6.6
49 - 72 hours	4	1.2
Mode of delivery		
SVD	221	63.9
ASVD	6	1.7
CS	119	34.4
Blood loss at delivery in mls (mean ± SD)	451.3 ± 336.9	
Duration of hospital stay in days -median (range)	2 (2 – 30)	

Note: Nulliparous women have no previous delivery experience, hence they were excluded from the analysis of the place of last delivery.

Fetal Outcomes among parturients

Table 3 shows the fetal outcomes among these parturient 275 (79.5%) were delivered at term, and the average age of delivery was 37.6 ± 2.7 weeks. On admission to the labor ward, 12 fetuses (3.5%) had intrauterine death, while at delivery 23 babies experienced immediate neonatal death (Table 3). The mean birth weight was 3.04 ± 0.6 kg. At 1 minute and at 5 minutes, 181 babies (58.2%) and 271 babies (87.2%) respectively, had normal APGAR scores (Table 3).

Table 3: Fetal Outcomes in the study.

Characteristics	Frequency N = 346	Percent (%)
Gestational Age at delivery		
19 - 28 weeks	8	2.3
29 - 36 weeks	63	18.2
37 - 42 weeks	275	79.5
Mean gestational age at delivery	37.6 ± 2.7	
Status of baby on Admission		
Live	334	96.5
Intrauterine death	12	3.5
Status of baby at birth		
Alive	311	89.9
Immediate Neonatal death	23	6.6
Macerated	12	3.5
Weight of Baby	3.04 ± 0.6	
APGAR Score at 1 minute (N = 311)		
0 – 3	17	5.5
4 – 5	22	7.1
6 – 7	91	29.3
8 – 10	181	58.2
APGAR Score at 1 minute – median (range)	8 (2 – 9)	
APGAR Score at 5 minutes (N = 311)		
4 – 5	20	6.4
6 – 7	20	6.4
8 – 10	271	87.2
APGAR Score at 5 minutes – median (range)	9 (4 – 10)	

Note! APGAR was not calculated for the 35 babies that were dead at birth.

Relationship between booking status and sociodemographic status of parturient

The age of parturients ($\chi^2 = 9.53$; $p = 0.049$), religious affiliation ($\chi^2 = 16.89$; $p = 0.002$), marital status ($\chi^2 = 13.83$; $p = 0.001$), and educational status ($\chi^2 = 45.76$; $p = 0.001$) were significantly associated with the booking status of parturients in the index pregnancy (Table 4). Teenagers who got pregnant (OR = 4.82; $p = 0.039$) were 4 times more likely to be unbooked for antenatal care, while protestant Christians (OR = 8.94; $p = 0.001$) were 8 times more likely to be unbooked. Table 4 also shows that with lower educational attainment the odds of being unbooked for antenatal care increased (OR = 5.54 – 16.36; $p = 0.001$).

Relationship between booking status and ANC, Delivery features of parturients.

The place of last delivery among parturient significantly influenced their booking status ($\chi^2 = 45.76$; $p = 0.001$), parturient who delivered in non-medical facilities in their last delivery (OR – 13.18; $p = 0.001$) were 13 times more likely to be unbooked for antenatal care in the index pregnancy (Table 5). The odds of being unbooked were also higher among those parturient who visited traditional birth

attendants (OR – 12.78; $p = 0.001$) during the index pregnancy (Table 5). The odds of prolonged labor were higher among the unbooked parturient; parturient whose labor duration was between 24 and 72 hours (OR – 7.20; $p = 0.049$) were 7 times more likely to be unbooked for antenatal care than those whose labor duration was less than 24 hours. Cesarean section was also more likely among the unbooked (OR – 1.88; $p = 0.011$)

Table 4: Relationship between booking status and sociodemographic status of parturient

Characteristics	Booking status		χ^2 (p-Value)	Crude OR (95%CI)	p-Value
	Booked N = 250 (%)	Unbooked N = 96 (%)			
Age group					
15 - 19 years	3 (33.3)	6 (66.7)	9.53 (0.049)	4.82 (1.08 – 21.55)	0.039*
20 - 24 years	31 (66.0)	16 (34.0)		1.25 (0.55 – 2.85)	0.604
25 - 29 years	81 (77.9)	23 (22.1)		0.69 (0.33 – 1.42)	0.310
30 - 34 years	94 (73.4)	34 (36.6)		0.87 (0.44 – 1.74)	0.697
>35 years	41 (70.7)	17 (29.3)		1	
Religion					
Catholic	23 (85.2)	4 (14.8)	16.89 (0.002)	1	
Protestant	9 (39.1)	14 (60.9)		8.94 (2.34 – 34.58)	0.001*
Pentecostal	210 (73.2)	77 (26.8)		2.11 (0.71 – 6.29)	0.181
Jehovah's Witness	5 (100.0)	0 (0.0)		-	-
Islam	3 (75.0)	1 (25.0)		1.92 (0.15 – 23.35)	0.610
Marital Status					
Single/Separate	19 (47.5)	21 (52.5)	13.83 (0.001)	3.40 (1.74 – 6.67)	0.001*
Married	231 (75.5)	75 (24.5)		1	
Educational status					
Primary	11 (37.9)	18 (62.1)	45.76 (0.001)	16.36 (6.29 – 42.58)	0.001*
Secondary	119 (64.3)	66 (35.7)		5.54 (2.85 – 10.79)	0.001*
Tertiary	120 (90.9)	12 (9.1)		1	
Parity					
Nulliparous	68 (73.1)	25 (26.9)	4.58 (0.205)	1	
Primiparous	57 (75.0)	19 (25.0)		0.91 (0.45 – 1.81)	0.782
Multiparous	107 (73.8)	38 (26.2)		0.97 (0.54 – 1.74)	0.908
Grand multiparous	18 (56.3)	14 (43.8)		2.12 (0.92 – 4.88)	0.079

Table 5: Relationship between booking status and ANC, delivery features of parturients

Characteristics	Booking status		χ^2 (p-Value)	Crude OR (95%CI)	p-Value
	Booked N = 250	Unbooked N = 96			
Place of last Delivery					
Health Facility	163 (85.3)	28 (14.7)	69.36 (0.001)	1	
Non-medical facility	19 (30.6)	43 (69.4)		13.18 (6.73 – 25.81)	0.001*
Visit to TBA					
Yes	30 (33.0)	61 (67.0)	95.05 (0.001)	12.78 (7.27 – 22.47)	0.001
No	220 (86.3)	35 (13.7)		1	
Duration of Labor					



Characteristics	Booking status		χ^2 (p-Value)	Crude OR (95%CI)	p-Value
	Booked N = 250	Unbooked N = 96			
No labor	4 (66.7)	2 (33.3)	43.29 (0.001)	1	
< 24 hours	241 (77.0)	72 (23.0)		0.59 (0.11 – 3.33)	0.557
24 - 48 hours	5 (21.7)	18 (78.3)		7.20 (1.01 – 51.39)	0.049
49 - 72 hours	0 (0.0)	4 (100.0)		16.20 (0.59 – 441.7)	0.147
Mode of delivery					
SVD	170 (76.9)	51 (23.1)	6.67 (0.036)	1	
ASVD	4 (66.7)	2 (33.3)		1.67 (0.29 – 9.36)	0.562
CS	76 (63.9)	43 (36.1)		1.88 (1.15 – 3.07)	0.011

SVD - Spontaneous vaginal delivery; ASVD – Assisted vaginal delivery; CS – Caesarean section

Relationship between Booking status and fetal outcome in the study

The fetus status on admission to the labor ward ($\chi^2 = 25.34$; $p = 0.001$) and at delivery ($\chi^2 = 41.56$; $p = 0.001$) was significantly related to the booking status of the mother in pregnancy. The APGAR scores immediately after birth ($\chi^2 = 19.15$; $p = 0.001$) and at 5 minutes ($\chi^2 = 12.81$; $p = 0.001$) were also related significantly to the booking status of the parturient in pregnancy (Table 6).

Table 6: Relationship between Booking status and fetal outcome in the study

Characteristics	Booking status		χ^2 (p-Value)	Crude OR (95%CI)	p-Value
	Booked N = 250	Unbooked N = 96			
Gestational Age at delivery					
19 - 28 weeks	4 (50.0)	4 (50.0)	8.02 (0.018)	3.10 (0.76 – 12.75)	0.116
29 - 36 weeks	38 (60.3)	25 (39.7)		2.04 (1.15 – 3.63)	0.015
37 - 42 weeks	208 (75.6)	67 (24.4)		1	
Status of the baby on Admission					
Live	249 (74.6)	85 (25.4)	25.34 (0.001)	1	
Intrauterine death	1 (8.3)	11 (91.7)		32.22 (4.09 – 53.29)	0.001
Status of the baby at delivery					
Alive	240 (77.2)	71 (22.8)	41.56 (0.001)	1	
Immediate Neonatal death	9 (39.1)	14 (60.9)		4.88 (2.01 – 11.89)	0.001
Macerated	1 (8.3)	11 (91.7)		40.56 (5.18 – 37.34)	0.001
APGAR Score at 1 minute					
	N = 240	N = 71			
0 – 3	10 (58.8)	7 (41.2)	19.15 (0.001)	3.83 (1.34 – 10.89)	0.012
4 – 5	11 (50.0)	11 (50.0)		5.46 (2.16 – 13.81)	0.001
6 – 7	66 (72.5)	25 (27.5)		2.07 (1.12 – 3.82)	0.020
8 – 10	153 (84.5)	28 (15.5)		1	
APGAR Score at 5 minutes					
	N = 240	N = 71			
4 – 5	11 (55.0)	9 (45.0)	12.81 (0.002)	3.36 (1.33 – 8.54)	0.011
6 – 7	11 (55.0)	9 (45.0)		3.36 (1.33 – 8.54)	0.011
8 – 10	218 (80.4)	53 (19.6)		1	

Discussion

In this study, 3:1 patient booked for antenatal care as against the unbooked respectively. Our results were similar to another study in Jos, Nigeria where only 2%

of pregnant subjects were unbooked.⁵ What these two studies showed is that a larger proportion of the Nigerian antenatal populace is becoming aware of the importance of antenatal care as a maternal life-saving



instrument.^{2,3} The mean age for the antenatal mothers in the study was 29.8 years. This mean age is a ripe age in life when women would have finished basic things like education, and learning skills, an age where they want to have their own desired families devoid of pregnancy terminations as seen in teenagers who contribute a substantial amount to the high abortion rates in Nigeria.⁶ In our study, teenage girls who are pregnant are 4 times more unlikely to book for antenatal care. It is an evidence-based fact that antenatal care saves lives. The mean age of subjects in this study also featured statistically significant to the likelihood of registering for antenatal care. Ninety-one-point six percentage points of subjects had either secondary or tertiary education and this also tested statistically significant to the likelihood of booking for antenatal care. These results are similar to a study in Lahore where women's literacy played a significant role in their participation in antenatal practices.⁷

Eighty-eight percent of the antenatal subjects in the study were of the Christian Pentecostal faith. With such a high mix of Christian religious faith, there may be antenatal subjects' bias towards antenatal care practiced in Churches which is a mixture of orthodox and Traditional birth attendance practices.⁸

The place of the last delivery significantly affected their booking status in the index pregnancy. A third of our unbooked patients delivered outside a medical facility in the last pregnancy and our results showed that they were 13 times more unlikely to register for antenatal care in the ongoing pregnancy. The scenario was the same for those who visited TBA in the last pregnancy and were 12 times more unlikely to register for antenatal care.³ Worldwide antenatal care has been proven to prevent the death of a woman in pregnancy, labor, and the puerperium. Our results are similar to a study in Malawi where a third of their study subjects delivered in a non-medical facility. Malawi has one of the worse maternal mortality ratios in the World.⁹

The results of our studies also showed that the unbooked women were 7 times more likely to have prolonged labor that lasted between 24 hours-72 hours compared to the booked patients. What these results tell us is that Obstetricians and care planners should devote more time and resources to unbooked patients to prevent adverse outcomes of this cohort of patients.

Our results also showed that the unbooked subjects have a higher odd of 32 compared to the booked patients of being admitted into the labor ward with intrauterine fetal death. These results are similar to a study in India on causes of intrauterine death among unbooked patients.¹⁰

Our results also showed that the APGAR scores at birth were related to the mother's booking status, which was more favorable to babies of booked mothers.

Limitations of the study: Our sample size is small, this may be because the Niger Delta University Teaching Hospital is built in a semi-urban area with a low population and consequently low patient turnout. Secondly, our medical records are not digitalized for efficient retrieval of patient records. We think in the future, the hospital management will pay attention to this latter issue.

Conclusion

It is evident from our study that the booked patients have more favorable outcomes in all areas of care: antenatal, delivery, and puerperium. Healthcare providers and Health care planners have to reappraise our antenatal healthcare programs in sub-Saharan Africa and close the gaps in the system of care that led to loss of maternal and infant lives. The result of this study showed antenatal care is superior to other traditional form of care. Health care planners and care givers, we need to double their efforts to bring the unbooked patients from the woods so that they will not experience diversities like maternal morbidity and mortalities.

Conflict of interest: The authors have no conflict of interest while preparing this manuscript.

Authors' contributions: AO Addah conceptualized and designed the study, coded the data into SPSS and wrote the entire study including the references. ID Akanate proofread the study and made corrections. He also extracted relevant information from patients' folders into the proforma.

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